Soil Conservation

January 1979

U.S. Department of Agriculture

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To Change the Land-Use Collision Course with Disaster

From the Administrator

An empty, long-unused silo left standing in the parking lot of a Wisconsin shopping center towers above the low-rise storefronts in mute testimony to the land's former use.

No State is immune to the incredible pressures on rural land. Since 1968 alone, SCS estimates that Americans have converted the equivalent of the State of Louisiana—about 29 million rural acres—to shopping centers, housing areas, roads, airports, lakes, and other nonagricultural uses.

By the year 2000, at the current rate, we will have converted the equivalent of the State of Oregon—an additional 60 million acres of such land—to meet the needs of population growth.

Much of the land so converted is prime farmland, and many of the conversions are essentially irreversible.

Agriculture Secretary Bob Bergland calls this conversion of our farmland "a collision course with disaster" in our future ability to produce sufficient food and fiber to sustain our standard of living.

The Department of Agriculture's present land-use policy, signed by the Secretary on October 30, 1978, reflects the Secretary's and the Administration's concern with the land-use issue. A pattern of development that recognizes the importance of retaining agricultural lands is the main objective of the policy.

SCS and other USDA agencies are stepping up assistance to local residents and local agencies in their efforts to retain important farmland, forestland, rangeland, and wetland and to avoid encroachment on flood plains.

The Department will be guided by this policy in its own programs and during its reviews and comments on draft environmental impact statements, rules and regulations, and program proposals of other Federal agencies.

As important farmland retention rises on the list of State and local government priorities, SCS and conservation districts increasingly will be called upon to suggest reasonable and practical alternatives to reducing the remaining supply of these important lands.

If we are to cope successfully with today's serious challenges to the retention and conservation of the renewable natural resource base, SCS and conservation districts will need to strengthen and broaden our historic partnership for conservation.

Our task, a formidable one, is to encourage land users and governments to consider all the alternatives and to opt for the long-range view toward preserving our land resources.

When we are able to speak with a single voice, we will increase our chances of being heard and heeded.

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Bob Bergland
Secretary of Agriculture

Mel Davis, Administrator
Soil Conservation Service

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Front cover:
A Washington, D.C., student hugs a plant which, along with other supplies, was awarded to his school for its progress in environmental education. See article on pages 12 and 13. (Photo, W. T. Webb, Jr.)

Back cover:
Using a stereoscope helps soil study workshop students understand how terrain and soil types affect sound land use decisions. See article on page 4. (Photo, Robert J. Brejcha.)

City Course in Soils Study

by Robert J. Brejcha

City dwellers take a mini-lesson in soils.

In many rapidly expanding urban areas, city parks are taking on new importance to people. Where formerly the parks offered a breathing space for city dwellers to get away from congestion, concrete, and busy streets, they now are often used as study areas, outdoor theaters, and sometimes for camping sites.

In Independence, Mo., the 70-acre George Owens Nature Park, dedicated a year ago, offered a program of 13 Saturday workshops last summer ranging from courses in astronomy to whittling and wood carving.

Each of the workshops is taught by volunteers from the community with Bruce Hickam, park supervisor, as program coordinator.

Among the Saturday workshops is a 4-hour mini-course entitled "Soils Study." Kathy Seddon, a soil conservation aid who is employed by the Jackson County Soil and Water Conservation District (SWCD) through the Comprehensive Employment and Training Act (CETA) program, is the volunteer instructor.

"Environmental education may be one of the district's most important missions," she said. "If we expect to assist with growing erosion-sedimentation problems and related water quality issues in the Kansas City area, we must instill a conservation attitude in the public mind."

Paul Hilpman, professor of geology at the University of Missouri at Kansas City, who is a member of the district board, helped Seddon develop the soils study course.

"Conservation education should be a part of the learning program in all schools from kindergarten through grade 12," Hilpman said. "The conservation ethic is not an inherent characteristic of people; it is a learned attitude. The George Owens Park workshop program is a good way to reach a large number of people."

Throughout the soils study course, Seddon emphasizes soil capabilities, land use choices, and conservation practices necessary for proper use of soil in providing food and fiber for people.

"Since the number of elementary schools in Jackson County runs into the hundreds, it is impossible for me to reach each of them individually. By working as a volunteer with the park workshop program, I can help the Jackson County district bring conservation understanding to those who truly want to learn," Seddon added.

Mr. Brejcha is resource conservationist, SCS, Independence, Mo.

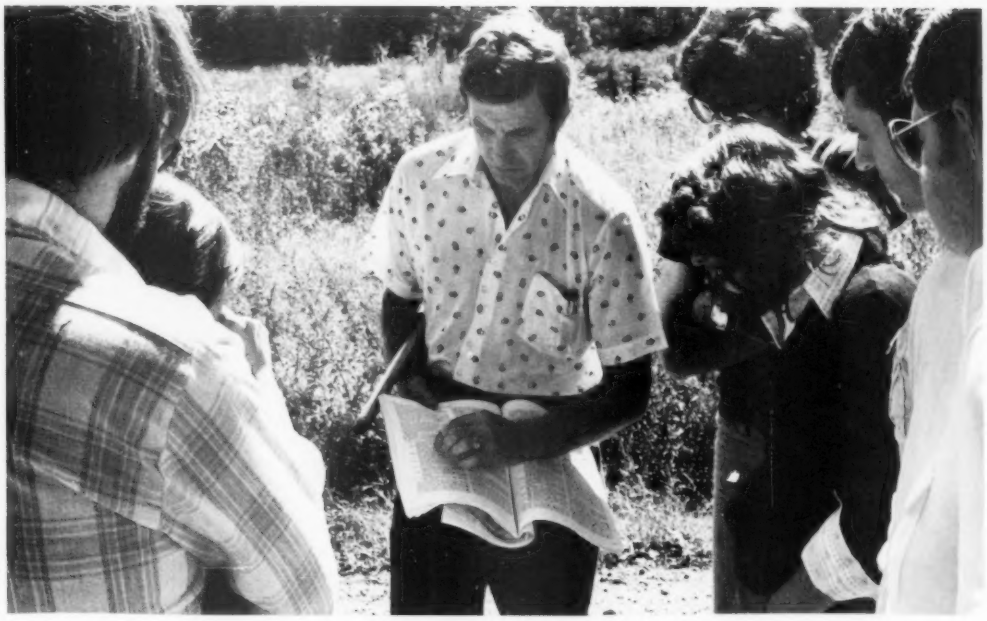
Kathy Seddon (left), a soil conservation aid employed by the Jackson County Soil and Water Conservation District, uses soil maps to teach about land-use planning and conservation practices.

Winning Places

Every year the National Association of Conservation Districts and Allis-Chalmers sponsor the Environmental Conservation Education Awards Program. The two top conservation districts for 1978 are from Ohio and Washington.

A Place Where Everybody Learns

by Thomas W. Levermann



SCS District Conservationist Adrian Achtermann uses the Summit County Soil Survey to prepare Akron University graduate students to lead an intercollegiate geology field trip.

Precariously perched on a steep riverbank in Summit County, Ohio, eight graduate level geology students from the University of Akron and their instructor study gravelly soils exposed after a sudden and violent flood.

Deep in the woods at a YMCA camp, 25 sixth-graders, participating in a 2½-day resident outdoor education experience, discuss location, size, colors, and uses of plants.

At an elementary school, teachers identify the natural and human resources at the school and plan how to incorporate them into their emerging environmental education program.

These three seemingly unrelated events are all tied to the conservation education program of Ohio's Summit Soil and Water Conservation District (SWCD). For its outstanding achievements in conservation education, the district took first place in the 1978 National Association of Conservation Districts (NACD) and Allis-Chalmers Environmental Conservation Education Awards Program.

In serving the rapidly urbanizing greater Akron area, the district has a longstanding commitment to education. In the late 1940's, it organized its first conservation tour for ministers, and in 1950, the district began providing scholarships for students to attend the Ohio Forestry Association camp.

Tours and scholarships are still a part of the district's educational program. But to meet the increasing demand for environmental and conservation information, the district has broadened its educational efforts.

Jean Call, chairperson of the Summit SWCD, said, "In this highly urban area, we have found the potential for environmental conservation education unlimited. There is a great need and desire on the part of our citizens to learn about the environment and ways to protect it. Cooperating with the educational community provides us the oppor-

tunity to share the district's experience and expertise in soil and water conservation with literally thousands of people every year."

The district board receives program suggestions from its education committee. Composed of representatives from universities, schools, agencies, and the district board, the eight-member committee meets annually to review the community's environmental education needs and determine how the district can help meet those needs.

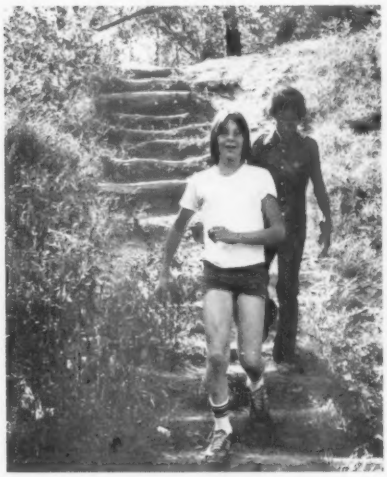
What has emerged is a program equally divided between higher education and secondary and primary education.

Both the University of Akron and Kent State University have called on the district board and staff to help with planning programs for and instructing several undergraduate and graduate natural resources and conservation classes. Through the contacts made with teachers, prospective teachers, and interested citizens at the programs, district personnel are being asked to help with educational programs throughout Summit County.

Also, as a result of the district's growing involvement with the community, requests for assistance in developing outdoor classrooms and arboretums on school grounds have increased. In addition, the district is being requested to solve erosion problems on school sites.

At McDowell Elementary School in Hudson, a team consisting of Principal Jim Staud, Soil Conservation Service District Conservationist Adrian Achtermann, Bob Mravetz

School's out! At Jennings School in Akron, two students on their way to the playground jog down steps placed on a slope that was eroding.



The school's conservation plan included controlling erosion on this hillside. Most of the plants used for protective cover are native to Ohio.

Students and teachers at Jennings School established an experimental planting area using desert plants. They selected plants adaptable to Ohio's climate.

Sixth grade students from Akron public schools attended an annual resident environmental education program. They learned about plants and their uses including how to identify plants by leaf shape, color, and size.

and Tom Adolph from the University of Akron, and several McDowell teachers is planning the restoration of a ½-acre pond adjacent to the school property. An interdisciplinary environmental education program will be developed using the resources found on the school property and around the pond.

Just a 5-minute walk from the school, a 30-acre forested area was purchased by the Hudson local school board to be used as an environmental education area for the entire school system. The conservation district helped the school board develop a learning trail through the woods.

All members of the McDowell planning committee have participated in the University of Akron's summer outdoor education program lead by Mravetz and Adolph.

In Akron, the Jennings Elementary School playground is about 40 feet lower than the school building. The steep slopes were eroding because of the thin vegetative covering and heavy student traffic on the hillsides. The district developed a conservation plan for the problem area which called for planting trees and shrubs, installing log steps, and developing a desert ecology area near the school building. Students and teachers obtained the necessary plant materials and went to work with much success.

Reflecting the prevailing attitude toward environmental education, Ronald "Oz" Hibbard, director of elementary education for Summit County schools, said, "The environment is such a natural motivator, everyone's positive about environmental education."

That attitude is apparent throughout the county. The Akron school system has assigned three teachers to work full time with its resident environmental education program, now in its 13th year. Annually, each of the approximately 3,000 sixth-grade students in the Akron public schools will spend 2 to 4 days at camp during the school year—from late September until early the following May.

High school students, many of whom participated in the camping program when they were in sixth grade, serve as counselors and program facilitators. Conservation district staff lead soils investigations, describe environmental relationships, and discuss the role of soil conservation in environmental management.

"In an urban area, large numbers of people are directly and indirectly influenced by educational programs," said Jean Call. "As a conservation district, we have the resources to bring people together. And we have done that. We also have the resources to provide the direct personal assistance to all levels of education. And we are doing that." The results have been dramatic.

Ten schools are in the final stages of developing conservation plans for their outdoor classrooms. In preparation for leading the 28th Annual Ohio Intercollegiate Geology Field Trip, hosted by the Institute of Environmental Studies at the University of Akron, Adrian Achtermann instructed graduate-level geology students about the characteristics of Summit County soils.

Alys Briers, Ohio State winner of the 1978 NACD and Allis-Chalmers Conservation Teacher-of-the-Year Award, used the resources of the district to help organize and operate a resident environmental education experience for fifth graders from F. H. Bode Elementary School.

Principal Charles Rodefer enthusiastically supported Briers. "There are many benefits of this type program, not the least of which are that the students see their teachers as human beings. From that, a close and meaningful relationship develops," said Rodefer. "The camp even helped with a severe discipline problem we were having with one student. After the resident camp experience, this particular student was much better behaved. Back in the classroom we would share common experiences which brought us together as individuals."

The district has become a fully active partner in environmental education in Summit County. "People are asking for our assistance, and we will continue to serve them," said Call.

The challenge for the district and educators in Summit County is well stated by Oz Hibbard. "What our children do with the environment when they are running the country will depend on what we, as educators and conservationists, do today."

Mr. Levermann is educational relations specialist, Information Division, SCS, Washington, D.C.

A Plan for All Ages

by Kay Mergen

SCS Soil Conservationist Ric Zarwell introduces sixth graders to wildlife studies during a week-long environmental education program at Camp Wooten.

Walla Walla County Conservation District's education program is a winner. It won second place in the Environmental Education Awards Program sponsored annually by the National Association of Conservation Districts and Allis-Chalmers.

The district, located in southeast Washington State, planned a broad range of activities for adults, students at all grade levels, and youth groups. Recognizing education as a life-long, continuing process, the district emphasized diversity in the program to meet many different needs in helping people understand and cope with conservation issues.

The conservation district's education committee includes Jackie Ormsby, curriculum director, and Elton Fenno, curriculum coordinator, for Walla Walla School District; Kenneth Knowles, chairperson of the conservation district board and a farmer; Jack Winchell, National Park Service naturalist; Howard Willson, county extension agent; and Larry Hooker, district conservationist, and Ric Zarwell, soil conservationist, both with the Soil Conservation Service. Chairperson of the committee is Larry Hector, agronomist for a local corporate farm.

During a series of meetings with teachers and school administrators, education committee representatives helped establish goals and objectives for environmental studies.

In working with the environmental education program for county schools, the education committee contacted each school principal to offer help through the conservation district with outdoor classrooms and other environmental studies. In 1977, conservation plans for outdoor learning areas were prepared for nine schools.

To encourage teachers to make use of school sites and other local resources, one of the assigned projects in a graduate level credit course for inservice teachers was preparing individual study guides

and lesson plans that could be used by all teachers in the school district.

The lesson plans were then published by the Walla Walla School District Curriculum Office in two booklets titled "Outdoor/Environmental Education Teachers Guide and Lesson Plans." One of the books covered kindergarten through sixth grade and the other, grades 7 through 12. Ric Zarwell served as coordinator.

Each of the lesson plans identifies learning objectives, outlines suggested activities, and includes possible followup studies, supplementary reading, sources of community help, and lists of films and slides. Areas of study are science, social studies, language arts and creative writing, mathematics, and ecology.

The conservation district, through the education committee, provided materials and other help to fifth grade students from Walla Walla County, Wash., and Umatilla County, Oreg., who took part in a 2-day Weston Mountain School forestry tour. Instructors for the eight learning stations included representatives of the Oregon Department of Forestry, Extension Service, Boise Cascade Corporation, Washington State Game Management Department, USDA's Forest Service and SCS, and operators of privately owned Christmas tree farms.

Sixth grade students from 11 different schools in Walla Walla County each year spend a week at Camp Wooten, 70 miles east of Walla Walla on the Tucannon River. The camp is sponsored by the school district.

Elton Fenno is one of the directors of the camp. He remarked that the week at camp is "probably the first time in the lives of some of these youngsters that they have been away from TV, radio, the refrigerator, gum, and candy."

Study projects include learning about trees and other plants, wildlife and its place in the environment, and the impact of people on natural resources.

Art classes emphasize student perception of shapes, colors, and textures in nature as they relate to various art forms. Soil studies are directed by a retired SCS conservationist, Evard Harrison, and his wife. A soil pit on the learning trail gives students a look at soil horizons and each student creates a miniature soil profile in a clear plastic tube.

Conservation district activities with adult groups are carried on in cooperation with many agencies and are geared to bringing a broader understanding of conservation to all citizens.

For example, a County Range Tour sponsored by the conservation district, USDA's Extension Service (now Science and Education Administration), and Walla Walla Chamber of Commerce, featured a look at the deer and bear management programs of the State Game Department; it also included a discussion of proposed wilderness areas in the Umatilla National Forest.

A "meeting of the minds" session, arranged by the conservation district, was attended by county landowners and representatives of the U.S. Army Corps of Engineers to discuss several issues related to the Snake River drainage area.

Ric Zarwell, representing the conservation district, is serving as chairperson of an ad hoc committee to develop 103 acres of historic Fort Walla Walla Park as a nature and learning area for the community. Also on the committee are representatives of the National Park Service, USDA's Forest Service, the local school district, Blue Mountain Audubon Society, U.S. Army Corps of Engineers, Walla Walla Historical Society, Whitman College, and the City Parks Department. The fort dates back to 1857 when Marcus Whitman and other pioneers were traveling through the area.

District activities also included assistance to the Inland Empire Natural Resources Youth Camp that enabled 10 high school age youths to attend the 1-week resource camp on Lake Coeur d'Alene in Idaho. High school classes in Walla Walla took part in soil investigation field trips and in woodland management studies. One class designed and worked on a nature trail at Kiwanis Camp in the Blue Mountains.

Also with the help of the conservation district, 70 Girl Scouts took part in two study sessions on water resources and aquatic life that included management of watersheds and water needs for people.

Ms. Mergen is head of educational relations, Information Division, SCS, Washington, D.C.

The Summit County Soil and Water Conservation District and the Walla Walla County Conservation District represent the North Central and Pacific National Association of Conservation Districts regions. Other regional district winners of the NACD and Allis-Chalmers Environmental Conservation Education Award are:

Northeastern—Monroe County Conservation District, Stroudsburg, Pa.

Southeastern—Lexington Soil and Water Conservation District, Lexington, S.C.

South Central—Crescent Soil and Water Conservation District, Metairie, La.

Northern Plains—Wyandotte County Conservation District, Kansas City, Kans.

Southwestern—Yuma Conservation District, Yuma, Colo.

Above, one of the student projects at Pioneer Junior High School included measuring the velocity of water flowing in a small stream on the school site. At right, soil studies at Camp Wooten give students an understanding of texture, color, and the techniques of testing for pH and other characteristics that determine soil potential for various uses.

Above, classes in water safety are part of the Camp Wooten program for sixth graders from Walla Walla schools.

At left, each student puts together a miniature soil profile as part of the soil study activities.

Long-Range View of Learning

by Sylvia K. Shugrue

More important than blue ribbons in outdoor education programs are the skills, attitudes, and understanding that students gain in managing their environment.

Developing outdoor classrooms for several schools in an area is a challenge. It takes dedication and effort. It demands the ability to respond positively to changing situations.

Many changes have taken place in environmental education programs in Washington, D.C., schools over the last 20 years. But some aspects common to all District schools' outdoor projects can be used as guides in maintaining an environmental education program for children everywhere.

Vital to the continuity of any program are adult leaders committed to the use of school grounds as a place for children to learn about, manage, and appreciate their environment. They must be committed to providing children the opportunity to experience planting a garden, a shrub, or a tree and watching it grow; or shaping, liming, and seeding an eroded area and watching plants spread a protective cover over it.

In the District, program leaders usually come from outside the school system. They are parents; educators from all levels of teaching; and representatives of Federal resource agencies, the D.C. government, and conservation organizations.

District schools range from those having large sites available for a variety of conservation activities to others with very little soil for planting. At the 105-year-old Stevens Elementary School in commercial downtown Washington, sidewalk bricks had to be removed to make room for planting areas.

Another District school, Francis Scott Key Elementary, maintained an outdoor classroom for about 15 years. The program was started as a science project, with teachers, a science coordinator, and volunteers from the Soil Conservation Society of America (SCSA) developing outdoor activities such as soil studies and planting projects for students.

In 1972, Soil Conservation Service District Conservationist Ernest Moody prepared a 3-year conservation plan to be developed by the children at Francis Scott Key with the help of teachers, maintenance personnel, interested parents, and other volunteers.

Some staff members of the U.S. Geological Survey (USGS) were so impressed by the quality of work done by the students at the school that they started a mapping program for them. The school site was well suited for teaching skills and concepts of topographical mapping. USGS also worked with teachers on testing earth science curriculums the agency had developed.

The school was featured as a model project in a series of articles in *Science and Children* magazine and presented in programs at two national conventions of the National Science Teachers Association.

New and different learning experiences must be planned year by year as an environmental education program develops. Photographs taken over the years can show the transformation of a school site, but to students who look at them every day, shrubs planted in 1973, for example, are taken for granted by 1979; a hillside reclaimed from erosion and no longer scarred seems to have always been covered with

Ernest Moody, SCS district conservationist for the District of Columbia, helps children make a study of soils on the school yard.

Photo by W. T. Webb, Jr.

grasses and other vegetation.

Children learn to respect the environment through managing a bit of it on the school site. A student at Eaton School in center city Washington said, "Now that I know the problems of soil erosion and how to solve some of them, it will be hard to look at soil being washed away without thinking about it twice."

As an incentive to further conservation work at school sites the Washington Chapter of SCSA established the Thomas L. Ayers Outdoor Classroom Award, in memory of a dedicated SCSA volunteer who spent many hours working with District teachers and students.

To be eligible for the noncompetitive award, a District school must have had an environmental education program for at least 1 year and have made some progress in conservation work. Last spring, SCSA recognized 11 schools for their outdoor education efforts. Awards consist of supplies such as shovels, seed, or shrubs that program leaders, school personnel, and students decide they will need after they evaluate their plans for future projects.

Today, at schools throughout Washington, D.C., conservation learning goes on. Some schools have completed their original conservation plan, changed instructional emphasis, and now leave outdoor classroom maintenance to the custodial staff. Others continue the never-ending task of conserving, maintaining, restoring, and beautifying their school grounds with the help of the district conservationist and other resource people.

To expect a program or a model project to remain at its peak is to deny that change—in the learning process as well as in nature—is the only constant. As school administrators, teachers, and students move from school to school, program emphasis and interests inevitably will change. Last year's vibrant environmental education program may be virtually nonexistent this year.

Program leaders must not be discouraged by these changes. Success should not be measured by accomplishments at one school alone but by the continuing and expanding environmental education program which extends to many schools and the educational objectives accomplished and skills acquired by students. Leaders need to keep the spirit of outdoor education alive and moving from school to school.

In the District, an inactive program is not regarded as a failure but as another challenge—a challenge to return to that school again, to motivate new teachers and new students.

Program leaders should not look only to the exemplary projects for inspiration. Instead, they can learn from a student at Walker-Jones School, who, after working a year to revegetate an area compacted by the tracking of many little feet, said, "A plant cannot move from place to place. It must stand and meet its enemy face to face."

Ms. Shugrue was a science resource teacher with Washington, D.C., public schools and is now retired. She is also a former president of the National Science Teachers Association.

Conservation Planning with Class

by William W. McCartney
and Jane Johnson

Farmers get credit for do-it-yourself conservation planning.

Directors of the Adams and Pike Counties Soil and Water Conservation Districts (SWCD's) in west-central Illinois have found a way to provide conservation planning assistance more effectively to more people in less time.

In cooperation with John Wood Community College in Quincy, Ill., and the Two Rivers Resource Conservation and Development (RC&D) Area Council, a conservation planning course was developed and offered through their Outreach Program at Pittsfield and Quincy.

Of the 46 class members in the first class, 37 are active farmers. These farmers form the nucleus of mutual interest groups in Adams and Pike Counties. "The participants want practical information they can take home and apply in their own operation," said Kurt Bobsin, district forester, Illinois Department of Conservation.

The course objective is to accelerate conservation planning in the Two Rivers RC&D Area. The students become involved in the planning process by actually developing a conservation plan on their own land. This gives them a working knowledge of conservation planning and leads to resource management systems being applied on the land in an orderly manner.

The instructional method is an innovative course feature. Instructors are local, State, and Federal agency representatives who are experts in various aspects of the conservation planning process. Twelve guest instructors are cooperating to make the conservation planning course informative and practical. They are enthusiastic about this approach because in a 3-hour period they can provide the course participants with indepth information on conservation practices.

Class lectures include presentations on: history of the conservation movement, explanation of soil and water conservation districts, soil formation, soil fertility, woodland management, fish management and water quality, Universal Soil Loss Equation, and what a conservation plan is. Also, soil and water conservation practices (mechanical and cultural), wildlife management, livestock waste management, financing conservation plans, and 208 water quality management are discussed. In addition, two laboratory sessions are held for students to develop conservation plans.

In support of classroom presentations the Soil Conservation Service

To augment the classroom presentations, SCS district conservationists make personal visits to students' farms and assist them with conservation planning.

district conservationists in Adams and Pike Counties assist participants in preparing their conservation plans by making personal farm visits.

Wayne Kinney, district conservationist in Pike County, said, "We are helping class members obtain all the information they will need to prepare their own conservation plans. And, at the same time, the class members gain a real appreciation of the complexity of the conservation planning process."

An added bonus is the 3 hours of credit that the class participants receive toward an associate degree in agriculture from the John Wood Community College.

The most common approach used in working with mutual interest groups is to hold four sessions of 3 to 4 hours each in which several subjects are discussed. A 15-week course gives instructors the opportunity to go a little deeper into each subject and provide more information to the landowners, enabling them to make decisions on how their land should be used.

Larry Fischer, coordinator of the agriculture curriculum for the college, was very receptive to this concept and worked to get the course offered for the fall semester.

Is the Conservation Planning Course an idea ahead of its time? "Apparently not," said Fischer, "The 46 students enrolled in the two locations make these classes some of John Wood Community College's most successful. The students enrolled have diverse backgrounds. More than 70 percent are farmers and the other 30 percent consist of high school and college students."

Fischer feels the support of the Adams and Pike SWCD's has greatly contributed to the course's success. Not only have the district chairpersons served as instructors, but they actively recruited participants for the classes.

Louis Reuschel, Adams County SWCD chairperson, explained, "The course is one way of accelerating planning and application of resource management systems for viable land treatment."

Mr. McCartney is RC&D coordinator, SCS, Pittsfield, Ill.
Ms. Johnson is environmental education coordinator, Pittsfield, Ill.

At left, Larry Fischer, agriculture curriculum coordinator, was instrumental in getting the conservation planning course offered at John Wood Community College.

At right, in addition to other topics, instructors lecture on various soil and water conservation practices such as parallel tile outlet terrace systems and grassed waterways.

A Teaching Resource for Resource Teachers

by Karl Hellerick

Teachers in Lebanon County, Pa., get all the latest news on conservation education thanks to a monthly newsletter the conservation district puts out especially for them.

Clair Gerberich, Lebanon Conservation District executive assistant, launched the first issue of Conservation of Resources and Environmental Education Learning, or CREEL, in March 1977, and it has been smooth sailing for the newsletter ever since.

Published nine times a year, CREEL provides teachers with resource information and tells them about the many ways the district can help them develop for their students valuable learning experiences in resource conservation both in and outside the classroom.

In the newsletter, the district offers teachers suggestions for conservation education activities, such as having students make wall murals or a frieze on fossil fuels and using a "talking" tree limb in teaching young students about the growth of a tree.

The newsletter also tells teachers about interesting field trips they can take with their students to learn about managing resources wisely. It tells about qualified people available to speak to teachers about conservation education and to talk with students about resource conservation in their classrooms or on field trips.

Information on where and how to secure conservation education aids such as films, energy conservation brochures, and soil and water conservation bulletins is listed in the newsletter.

The Lebanon Conservation District knows that variety is important in maintaining young people's interest in learning. CREEL covers a variety of conservation education topics: protecting forests through proper tree harvesting and wise use of timber; the care, selection, and history of the Christmas tree; the habitat needs of white-tailed deer; surveying on the contour; and others.

Through CREEL—the Lebanon County Conservation District's conservation education newsletter—Clair Gerberich, the district's executive assistant, receives requests from many teachers to bring conservation into the county's schools.

The district eliminates postage expense for CREEL by taking bundles of the newsletter to each school district which then distributes them to the schools where each teacher receives a copy.

The newsletter is less than 2 years old, but the conservation district has received many favorable comments from teachers and students alike about it and the learning activities it has generated. One teacher wrote, "Your newsletter has been most useful to me, both personally and in my teaching."

After Gerberich had made a presentation on soil conservation to a fourth grade class, one student wrote, "You were better than watching television."

Following a classroom demonstration by Gerberich on surveying, another student wrote, "Surveying is when two men are out on a hill and get even with each other."

"Environmental education is something that people need to know about," said Gerberich. "We feel the CREEL newsletter is an effective tool for reaching them."

The Lebanon Conservation District is succeeding with its newsletter and in the many other ways it promotes conservation education in the county. In 1977, it won the Northeast Regional National Association of Conservation Districts and Allis-Chalmers Environmental Conservation Education Award.

Mr. Hellerick is district conservationist, SCS, Lebanon, Pa.

Three Wheeling Through Texas

by Eual G. Davis

Three-wheelers pick up where pickups bog down in designing terrace systems on the Texas High Plains.

Soil Conservation Service personnel at Tahoka, Tex., are saving time, money, and fuel by using an all-terrain vehicle and walkie-talkie radios to plan and design parallel terraces.

Farmers on the Texas High Plains use the all-terrain or three-wheeled vehicles for many farm jobs. SCS technicians who saw the vehicles at work recognized the advantages of using them to install conservation measures.

The Lynn County Soil and Water Conservation District (SWCD) board of directors decided to buy one all-terrain vehicle and a pair of walkie-talkies to help speed up service to district cooperators.

Every year for the past 12 years, SCS personnel working through the district have helped farmers in Lynn County install more than 190 miles of parallel terraces. Terrace systems require a tremendous amount of time to design, stake, lay out, and check because they must be built an even number of rows, and tractor trips, apart from end-to-end.

In planning a terrace system, a grid map is made of the field and elevation readings are taken every 100 feet in each direction. With this information, the design can be simplified and the system installed with the fewest cuts and fills, reducing the installation cost.

For years, SCS personnel used pickup trucks to drive over the fields to prepare grid maps. Vehicle maintenance and repair costs were high because of the many miles of hard driving. In addition, some of the fields in Lynn County are so sandy that pickups cannot travel across them when the soil is dry; they bog down. That meant that mappers had to get around the fields on foot, which takes a lot of time.

The all-terrain vehicles allow mappers to travel over sandy soils or plowed fields much faster and more economically than they could by walking or using a pickup. The wide balloon tires easily ride over plowed fields.

Walkie-talkies are used by the surveyors when making topographical maps. The person at the surveying instrument still uses a flag to tell the other person when to raise or lower the target, but they use the walkie-talkies when a question arises that can only be answered through direct communication. When SCS personnel are working 80- to 640-acre fields, the walkie-talkies save them a lot of time.

Records are being kept to see how much time and money are being saved with the three-wheelers and walkie-talkies. It takes about 16 hours to make a grid map and lay out a mile of parallel terraces on foot, about 13 hours by pickup, and only 9 hours using the three-wheelers and walkie-talkies. The savings in fuel and vehicle maintenance are even greater. The directors of the Lynn County SWCD are pleased with the results.

Mr. Davis is district conservationist, SCS, Tahoka, Tex.

SCS Conservation Technician Don Tumlinson, on the three-wheeler, and Soil Conservationist David Brinegar, at instrument, take readings in a field. Use of three-wheelers and walkie-talkies saves time and money in designing parallel terraces.

Dairyland Interest in the Water Bank

by Steve Foland

Wildlife gain from high interest in the water bank program.

An excellent stand of bromegrass and reed canarygrass provides cover for wildlife around a water bank cost-shared pond.

"In Columbia County, Wis., the Water Bank Act is being used for much more than to maintain a few cattails," said Soil Conservation Service District Conservationist Irwin Ten Haken. "Land owners and operators in the county who participate in the program are serious about preserving, restoring, and enhancing wetland for use as wildlife habitat. They are especially serious about attracting such migratory birds as teal and mallard ducks."

John and Jayne Clemmons' 103-acre farm in Fort Winnebago Township is a good example. When the Clemmons bought the farm in 1973, much of the land was being used for growing corn. During the first 2 years they owned the farm, the Clemmons leased the land to individuals who continued farming it.

The severe hazard of flooding on the farm made crop production a risky business. "Anyone who planted a crop on it was relying on sheer luck," said John Clemmons. "That's why I went to the local soil and water conservation district for help. I wanted a plan for ditching and draining the land."

Ten Haken and others at the district office studied the farm and determined that it had just the right combination of wetland and dry soils to make it eligible for the water bank program. The farm had a substantial amount of Type III wetland—having water on or near the surface and supporting cattails and reeds; Type IV wetland—having surface water 6 inches to 3 feet or more deep; and Type V wetland—having surface water up to, or a little less than, 10 feet deep. The farm also

The nearly 5,000 spruce and pine trees planted by the Clemmons will soon provide cover for wildlife and enhance the beauty of the farm.

had a substantial area of soils that could support grasses suitable for wildlife habitat.

"It was an ideal situation," said Ten Haken. "If the dry areas were no longer farmed and were planted to bromegrass, timothy, switchgrass, and other suitable grasses, waterfowl could nest in the grasses and use the wetland as a brood area. The brood area could provide excellent food and cover."

Ten Haken presented the Clemmons with alternatives to draining the land and explained the Water Bank Act of 1970 to them. "The land had been over-farmed for years," said Jayne. "It had only been taken from. We liked the idea of putting something back into the land and helping wildlife. Our only concern was that we would have to open the land to hunters. But Mr. Ten Haken assured us that under the water bank program we could post the land to prevent hunting without permission and thus control the wildlife population."

The Clemmons had already installed one wildlife pond on their farm near Neenah Creek. The pond and the creek supported some wildlife, but, as John said, "It didn't make us feel very good to learn from Mr. Ten Haken that we had also been plowing through waterfowl nesting ground."

The Clemmons decided that their land should be used as wildlife habitat, and signed a 10-year water bank agreement in 1976. Ten Haken prepared a conservation plan for the farm and staked out 68 acres as the water bank area. The plan called for a second wildlife pond to be constructed and for extensive seeding to selected grasses.

"To construct the pond," said Ten Haken, "we just scooped out a depression and let what had been underground water, or the water table, fill it up. The pond catches very little surface runoff water."

On the fringe of the pond, water bank cost sharing helped finance the seeding of an excellent stand of bromegrass and reed canarygrass for wildlife cover. An additional 28 acres not included in the water bank agreement is managed for wildlife production.

"The switchgrass, although somewhat difficult to establish," said Ten Haken, "is stiff stemmed and will remain as standing residue even after a winter of heavy snow. Waterfowl are very early nesters and switchgrass provides them plenty of early spring nesting material."

Approximately 5,000 pine and spruce trees had been randomly planted for wildlife cover prior to the water bank agreement. The trees will contribute to the beauty of the farm and will provide excellent cover for many types of wildlife. As Ten Haken said, "An important thing to remember is that, although the Water Bank Act is primarily for waterfowl habitat, many other forms of wildlife benefit from water bank areas."

To attract a variety of wildlife to their farm, the Clemmons retained all of the naturally growing wildlife habitat plants, such as the wild grapes that grow abundantly in some places on their land. Besides teal and mallard ducks, the farm attracts deer, raccoon, muskrat, grouse, and quail. The Clemmons had their property licensed as a game farm, and to date they have raised and released about 800 pheasants.

In managing the farm's game resources, the Clemmons allow fishing and some hunting, and John traps muskrat each year.

"It's sad," Jayne said, "that there are so few farms like ours. Animals need places like this. And people should have places like this to see, hear, and enjoy."

Mr. Foland is chief, conservation news & reports branch, SCS, Washington, D.C.

Telling Cattle Where to Graze

by Howard Harkey
and Noel Marsh

Whether it is called "high intensity, low frequency," "short duration," or "nonselective" grazing, the system spells out increased forage production, reduced supplemental feeding, and higher beef production.

Sid Goodloe moved to Capitan, N. Mex., in 1956, a drought year. The ranch he bought had a spring where thousands of cattle from miles around had watered, consequently damaging the range. During his first year in Lincoln County, Sid learned that much of the moisture comes in the winter. Summers are often too dry to produce dependable amounts of blue grama on which to base a forage program.

Other immediate problems Sid found on the ranch were soil erosion; depleted vegetative cover; poor water distribution; brush invasion onto the deeper, high forage producing soils; and insufficient fencing.

In 1957, Sid became a cooperator with the Carrizozo Natural Resource Conservation District and the Soil Conservation Service. He began installing conservation practices which included erosion control structures, range seeding, livestock watering facilities, brush management, and fencing to divide the ranch into winter range and summer range for better livestock management.

The range seeding was needed to put back into production old fields where dryland farming had failed during the homestead era.

Sid made good use of the Great Plains Conservation Program, administered by SCS, to accomplish much of the conservation work.

In 1971, Sid developed a ranch plan. The objective was to increase production on the ranch by 20 percent in 5 years, using a specialized grazing system.

"We hoped to double our population of western wheatgrass," said Sid. "Instead we tripled it. Production is probably up more than that."

Sid knows the value of cool-season forage for spring and fall grazing which reduces supplemental feed costs.

"My range is not dormant during late fall and early winter due to cool-season plants," explained Sid. "To develop an adequate population of cool-season grasses, selective grazing must be stopped.

"The best range management tool we have today is simple economics. When the cost of supplemental feed skyrockets, we are forced to grow more and better forage. That is when we learn the meaning of range management.

"The big gap in range management is between what is known and what is being done on the ground," Sid concluded.

After returning from Africa where he served as range advisor to the government of Kenya, Sid began crossfencing the ranch and rotating cattle.

During his 2½-year stay in Africa, Sid made several trips to Rhodesia where he learned about "nonselec-

The invading juniper on Sid Goodloe's range is controlled by dozing, but the better nut or cordwood producing pinyon trees are left.

A spring development and watering trough help Goodloe distribute grazing.

tive" grazing. This system became the basis for Sid's current rotation program for both summer and winter range.

Sid's grazing system consists of stocking a pasture with a large number of animals for a short period of time and then deferring for a longer period. Although this Rhodesian system has been adopted by Texas A. & M. University as "high intensity, low frequency" and is known by others as "short duration," Sid prefers to use the original term, "nonselective" grazing.

"Basically, I try to concentrate my cattle in each pasture for a short period of time, requiring them to eat unpalatable as well as palatable forage, while at the same time allowing unused pastures total rest," explained Sid. "Ideally, I would like to graze 2 to 3 weeks and rest 4 to 6 months, but I have to rotate my summer country in the summer and my winter country in the winter, so my grazing periods are longer."

Conditions such as heavier snow cover in the higher elevation winter pastures, pine needles which cause abortion in the spring in some pastures, and a suitable special purpose pasture for calving, make it necessary to vary rotations.

"Any worthwhile grazing system must be completely flexible and should have an emergency or drought pasture," Sid added.

Sid uses a six-pasture rotation, planned so that no pasture will be used at the same time during the growing season 2 consecutive years. Cattle complete two rotations over the winter country and two to three over the summer country. Grazing periods vary in length with available forage. Flexibility is always assumed.

"I get most of my cows bred in May while on fresh pasture of western wheatgrass and bottlebrush squirreltail. This grazing system has cut my supplemental feed bill in half. However," Sid cautioned, "no system will pay unless you get a reasonable amount of rain and a fair return for your product.

"I've found that I can increase the effectiveness of my summer rainfall by leaving some old grass to cover the soil. This reduces evaporation, and is a very important consideration in the mountain areas of the West."

Invasion of pinyon and juniper onto the loamy soils continues to be a problem. Brush competes on these sites with desirable forage plants for light and moisture.

"Controlled burning is a range management tool we are not using," Sid said. "The only reason is the danger of the fire spreading across the fence into the National Forest."

Brush management is done by dozing. Brush is left along drainages for wildlife cover. Pinyon pine trees with good form are left for Christmas trees, nut production, and landscape plantings.

The Goodloes are pleased with the results of their plan. Range condition has steadily improved, along with calf-weights and total pounds of beef produced. Broom snakeweed has been reduced significantly and a desirable balance of warm and cool season grasses, forbs, and browse has been achieved. The need for supplemental feeding has been reduced, except during heavy storms in the winter.

"I haven't increased my stocking yet," said Sid, "but I have the forage to do it. Here again, the relationship of the price of cattle to the cost of supplement is the big factor."

A recent analysis of Sid's range showed a range condition class jump from good to excellent since 1964. Most of the benefit was due to an increase in western wheatgrass. From clippings, it was determined that total production on loamy soils in 1964 was about 700 pounds per acre with only 10 percent western wheatgrass. In 1976, these same sites produced 1,450 pounds per acre, 27 percent of this being western wheatgrass. Total precipitation was more favorable in 1976 than in 1964, but had only a partial effect on forage production.

The Goodloes' grazing system provides other benefits including less selectivity and more uniform use of the forage, easier herd control and observation, fewer fences and watering systems to maintain at one time, and shorter breeding time, resulting in a more even-age calf crop.

According to Sid Goodloe, "The only practical approach to a more economical ranch unit is a more intensive and multiple use of the land resources, coupled with a conservation program to perpetuate forage production and other resources."

Mr. Harkey is range conservationist, SCS, Carrizozo, N. Mex.
Mr. Marsh is area range conservationist, SCS, Roswell, N. Mex.

They Came Out Smelling Like a Rose

by Gene Warren

After getting the parish garbage under ground, club members tackled above-ground projects—a park, a scenic trail, an outdoor classroom, and more.

They used to call them the garbage women—but not anymore. Now the folks in and around Harrisonburg, La., call the Harrisonburg Women's Club "that group that put a lot of beauty back into Catahoula Parish and tons of garbage under ground."

What accounted for the shift in opinion? As Harrisonburg Mayor Charlie Myers put it, "We just finally woke up to the fact that those women were working for the good of us all."

The club has been cited for its community action programs and holds the distinction of being the only civic club in the State to have a conservation plan with a soil and water conservation district.

"I think our club has another first going for us," said Club President Juanita Terry. "In 1977, our club was selected as the Outstanding Conservationist in the Catahoula Soil and Water Conservation District (SWCD). We were honored by the Goodyear Tire and Rubber Company, sponsors of the program."

The club began crusading several years ago for a garbage program in the parish. The members set out containers throughout the community and arranged to have them emptied at a central landfill.

"With our garbage program accomplished, we set our sights on developing the wooded areas around our town so more adults and young people could enjoy the out-of-doors," said Terry. "We had an ace going for us because Molly McCarty, a past president of our club, is also a member of the Catahoula SWCD Board, so the district joined us in our outdoor projects."

The club got into full swing in 1974. About that time a local minister deeded 1 acre of land to the club with the idea of developing a park. That was like a shot of adrenalin for the club. The members quickly turned to the Soil Conservation Service, the Louisiana Office of Forestry, and other groups for technical know-how. The park area was smoothed and planted with grass. Picnic tables and other park facilities were built.

In 1976 and 1977, the club launched other projects. Again calling on agencies and other groups for aid, club members planned a 20-mile Dogwood Scenic Trail for drivers. Then with the cooperation of a local lumber company, 6 acres owned by the company was developed into an outdoor classroom. The adjoining Rock Creek Canyon was developed for hikers.

"Much of what we have done could not have been done without the full cooperation of many groups," said Molly McCarty. "I could give a long list of groups, but these come to mind: Catahoula Parish Police Jury, Levee Board, Parish School

Mollie McCarty and Bill Kassel, board members of the Catahoula Soil and Water Conservation District; Houison Horne, SCS district conservationist; and Daisy Johnson of the Harrisonburg Women's Club (left to right) work on planning future club projects.

Board, Rotary Club, National Guard, Catahoula SWCD, and Kisatchie Delta of Louisiana."

Is their work paying off? The park, the outdoor classroom, the scenic trail, and the Rock Creek Canyon drew almost 10,000 people in 1977.

"We are especially thrilled at the success of the outdoor classroom," said club member Lessie Crawford. "Each year the Catahoula SWCD plans a half-day at the center for all fifth and sixth grade students. Someone from SCS or the district takes them on a walk along the trail. We have identified a lot of interesting points along the trail and we feel that young students and adults can learn a lot about the out-of-doors."

The Harrisonburg Women's Club members have not slowed down. They see long caravans of people walking and driving their trails and picnicking in their park and are thankful for the parish cleanup program. But they have plans to lengthen the Dogwood Trail to more than 40 miles and expand the outdoor classroom to accommodate more children. The Parish Police Jury thinks so highly of the "garbage women" that they appointed them the Catahoula Parish Tourist Promotion Agency.

The club isn't big in numbers—just 22 strong—but spirit and hard work make up for it. As the club members put it, "They called us garbage women a few years ago, but now we smell like roses."

Mr. Warren is public information officer, SCS, Alexandria, La.

Meetings:

January	
3–8	American Association for the Advancement of Science, Houston, Tex.
8–12	North American Game Breeders and Shooting Preserve Association, Kansas City, Mo.
9–11	National Council of Farmer Cooperatives, Las Vegas, Nev.
14–18	American Farm Bureau Federation, Miami Beach, Fla.
22–26	National Cattlemen's Association Convention and Trade Show, Houston, Tex.
28–31	National Wool Growers Association and National Lamb Feeders Association Joint Convention, Las Vegas, Nev.
30	Surface Mining and Reclamation Teamwork Symposium, Washington, D.C.
February	
11–15	Society for Range Management, Casper, Wyo.
13–14	Southern Forest Institute, Inc., Houston, Tex.
13–16	Air Pollution Control Association, Gainesville, Fla.
13–17	Association of Interpretive Naturalists, Inc., Bloomington, Minn.
14–17	American Association of School Administrators, New Orleans, La.
14–17	Land Improvement Contractors of America, Nashville, Tenn.
19–24	American Camping Association, Minneapolis, Minn.
27–Mar. 1	American Society of Agricultural Engineers Domestic Water Quality Symposium, St. Louis, Mo.
March	
3–7	Association for Supervision and Curriculum Development, Detroit, Mich.
3–8	American Society of Planning Officials, Miami, Fla.
14–16	Hardwood Manufacturers Association, Washington, D.C.
18–20	American Pulpwood Association, Atlanta, Ga.
18–23	The American Society of Photogrammetry, Washington, D.C.
23–25	National Wildlife Federation, Toronto, Ontario, Canada
24–28	North American Wildlife and Natural Resources Conference, Toronto, Ontario, Canada

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